

# Computing/Software WG Status

Tom Junk

DUNE Weekly Meeting

August 21, 2015

## Organization

DUNE Software & Computing Coordinator: Tom Junk

Deputy: To be determined

Subgroup structure goals:

This choice of subgroups is intended to match onto productive regular meetings and communication. It is not a 1:1 match onto roles, responsibilities, and duties.

Subgroups

- Offline Group
- FD Sim/Reco Group
- 35t Sim/Reco/Analysis Group
- protoDUNE Sim/Reco/Analysis Group
- Beam Simulations Group
- Collaborative Tools Group

## Offline Group

- Encompasses roles in the LBNE Org chart under Software and Computing (anything not Physics Tools)
  - Software Infrastructure
  - Data Handling
  - Distributed Processing
  - Databases
  - DAQ Interface
- The LBNE Software and Computing group had productive meetings, but the subgroups often consisted of just one or two people.
- Important task: Write the DUNE computing model document and maintain it. DOE asked LBNE to write one in May 2014. P5 and the new collaboration took precedence, but now it's time to start this effort up again.

## Far Detector Simulation and Reconstruction Group

- We used to have one of these, but 35-ton became a higher near-term priority for the limited scientific effort. Working on 35-ton software is synergistic with FD software however
- Three reviews – external FD technical review, director's review, DOE CD-1R review, emphasized need to focus scientific effort on the FD design.
- Separate issues from 35-ton – optimize design parameters such as wire angle and pitch. Many other design issues – gaps and edges – what is the impact on physics?
- For now, photon detector sim/reco discussion is within the detector sim/reco group. There's a lot of overlap though (same people)

## 35-ton Sim/Reco/Analysis Group

- Run is coming soon –
  - Testing APA's now
  - DAQ commissioning now
  - Filling with Argon at the End of October
  - Starting to devise shift-taking and authorship policy (35t specific)
- Software is being prepared so we are ready for the data when it comes
  - event filtering
  - online monitoring
  - data transfer and storage, and indexing (coordinates with offline group)
  - reconstruction
  - analysis
  - publication

## Beam Simulations Group

- Very similar roles to the LBNE beam simulations group
  - software and geometry development
  - target/horn/decay pipe/absorber optimization
  - systematic uncertainty estimation
- The corresponding DUNE group benefits from expertise in beam modeling and design from many institutions
- Interfaces with Alberto and Mary's Accelerator and Beam Interface Group

## ProtoDUNE Simulations and Reconstruction Group

- Responsible for simulating and reconstructing protoDUNE data
- Also the forum where the experiment design is discussed
  - How much of each kind of particle is needed. Run duration.
  - beam parameters
  - what's possible with the DAQ
- Computing requirements estimated within this group
- Interface with CERN computing infrastructure
- protoDUNE code librarian works in this group
- protoDUNE is a new LArSoft stakeholder and should participate in defining the future directions of LArSoft. There are regular LArSoft coordination meetings (bi-weekly), and steering group meetings and workshops
- Design choices to maximize the usefulness of the protoDUNE data for physics output
- Analysis strategy and code – what are the output measurements that are to be used for subsequent analysis and publication
- Preservation of data for later use

## Subgroup Co-conveners

- |                             |  |
|-----------------------------|--|
| • Offline Group             | TBD + TBD  |
| • FD Sim/Reco Group         | Tingjun Yang + Xin Qian  |
| • 35-ton Sim/Reco/Ana Group | Tingjun Yang + Michelle Stancari,<br>+ Mark Convery + Tom Junk |
| • protoDUNE Sim/Reco/Ana    | TBD + TBD  |
| • Beam Simulations          | Laura Fields + TBD   |

Convenerships will be for one year at a time, and reviewed. We expect many group leaders will serve more than one term.

Missing from the list – Near Detector Simulations/Reco: work to be carried out under the Near Detector Coordinator and Manager and the ND optimization Task Force – needs to interface with computing and software



## Relevant Task Forces

Limited duration.

Tackles time-critical questions

Cross working-group boundaries

Produce reports addressing the questions

- ND Optimization
- FD Reco/Physics/Optimization
- Beam Optimization

A related Working Group (not a task force), working under the FD Coordinator and Manager: FD Physics Performance

## Quite a lot Accomplished this Summer!

- Even though DUNE WG's are just getting formed, work has been ongoing in each one.
- Summer is a great time because university staff and students have more time to work on computing
- Progress to be reported at the September Collaboration meeting

## Useful Material

- New User Computing signup at Fermilab is being streamlined. Now DUNE computing folks don't have to worry about LBNF staff and whether they need grid access. All DUNE collaborators should.
- Fermilab resources slowly being named DUNE from LBNE or new DUNE ones being created. Many thanks to Steve Timm, Qizhong Li, and Fermilab's SCD

LArSoft users and stakeholders: See the slides at the *art*/LArSoft course from early August:

<https://indico.fnal.gov/conferenceDisplay.py?confId=9928>

FIFE workshop at Fermilab – useful tips on how to use computing resources:

<https://indico.fnal.gov/conferenceDisplay.py?ovw=True&confId=9737>